6. Or we may assume $\psi = (\cos x)^{2m}$; whence

$$\left(\frac{\psi'}{\psi}\right) = -2m \sec^2 x,\ r = \frac{1}{m},\ k = -2m, \text{ and } \theta - \phi = c_1 + c \tan x.$$

In this case the general formula (3) becomes

$$[(D+\phi)(D+\phi+c_1+c\tan x)-(n+1)(c+n)\sec^2 x]y = X.$$

By putting $\phi = c_2$, and $c = 0$, this is reduced to

$$\{(D+c_1)(D+c_2) - n(n+1)\sec^2 x\}\, y = X,$$

which is the equation solved by Dr. Hargreave at p. 52, in the Paper already referred to, and from a particular case of which he derives the solution of the equation of Laplace's functions.

Sir Robert Kane read a paper by the Rev. Professor Callan, on the results of a series of experiments on the decomposition of water by the iron galvanic battery, with the view of obtaining a brilliant lime light.